

Two Caltech Grad Students Hurt In Crash

Aero Association Plane A Total Loss



Wednesday, November 3 (evening) – 27J crashed. Dan Harris and Alan Wray alive but in hospital in serious condition. No further details as yet.

Thursday, November 4 (evening) – Received a call from Sally Harris at 4:45 p.m. She says Dan is conscious, but has the crushed vertebrae as reported. He will probably be in the hospital for two months; they will operate on his back. He was well enough to relate the accident to her.

Alan Wray is in worse shape. He has not regained consciousness (was delirious last night according to Dan). He has many facial cuts and

an (apparently) fractured skull. It is suggested that he may have sustained brain damage, but the doctors are not sure of that yet.

The accident took place on a strip on the east side of Lake Matthews. Santa Ana winds were prevailing which evidently required them to land toward a hill. They landed with a tail wind it is believed (Riverside Sheriff) on a soft field, but then decided to complete as a touch-and-go. The R/C was evidently not good enough, and as they drew near the hill, Dan took over on the controls. They evidently could not make it over even then, and in a last attempt to clear the hill, tried a steeper R/C and

thereupon stalled the plane and crashed.

"This is the story as best as Sally [Harris] knows it."

Saturday, November 6 – The latest word on the condition of Al and Dan is pretty good. The surgery on Dan's back scheduled for Friday was postponed because he was regaining feeling and some movement in his legs. He was taken out of intensive care today.

Al has regained consciousness and is doing much better. He will be moved soon to Loma Linda for plastic surgery.

Continued on Page Four

Canteen food
must be edible...

The CALIFORNIA Tech

Dabney eats it.

Volume LXXIII

Pasadena, California, Thursday, November 11, 1971

Number 8

Tech Talks: Astronomer Hoyle Contemplates Universe

by Gesine Lohr

One of the amazing things about the Caltech environment is the ease with which one can approach professors, even visiting ones from Britain, yet, even realizing this, I was thoroughly astounded to find myself sitting in Professor Fred Hoyle's office one Friday morning not long ago, with intent to interview. He was a quite charming man who kept throwing his fountain pen around his desk and grinning an impish grin, and he seemed extraordinarily pleased that I had read *The Black Cloud*, a sf book of his creation. At the close of the interview, we shook hands, then he walked me to the door, and escorted me to the end of the hall, all in an impeccably dignified manner; he then grinned incredibly, called out "Cheers!", and bounded up the stairs, leaving a very happily bemused Teacher behind. Herewith the interview:

Tech: I wanted to ask you first how you got into astronomy.

Hoyle: Well, I suppose I was always interested; when I was very young, I read books there were quite a number produced at that time—books by Eddington and Jeans, in particular, which I read. But I had a pretty clear view that it wasn't profitable to do astronomy without learning quite a bit of physics and

mathematics, and I think this probably was brought home to me by these very self-same books, where, obviously, these chaps were using as a basis of argument what you'd find in physics; I realized I had to learn this, and so I took mathematics and physics at the university. I pretty well forgot about astronomy for quite a while.

Then in, it must have been 1939, several things happened. Nuclear physics, which I had done my graduate work in, had clearly

Continued on Page Two

John Chemist

Hammond Wins Prize

St. Louis, Mo. George S. Hammond, chairman of the division of Chemistry and Chemical Engineering has been selected one of the ten recipients of the 1971 E. Harris Harbison Award for Gifted Teaching presented by The Danforth Foundation in St. Louis.

As a winner of the Award, Dr. Hammond received a \$10,000 grant to be used at his discretion in the furtherance of his academic career and interests. The Award was presented November 6 during a dinner held at Whittemore House—the Faculty Club of Washington University in St. Louis, Mo.



Malvolio disapproves, but the revels continue unheeding in Shakespeare's *Twelfth Night* Friday night [the 12th] in Beckman

House Giving Most to Y Will Win a Car

by Claude Anderson

Tomorrow the Caltech Y will begin its annual student fund drive. The monetary goal of the drive is to top last year's record of \$3600. But a more important goal is that of acquainting every student with the Y, the programs and opportunities it offers, and the ways in which students can involve themselves in and even initiate programs of interest to them.

The drive, headed by Y treasurer Belal Baaquie, will run through next Friday. Representatives in each undergraduate house and graduate department will distribute pledge cards and talk to students. Contributions may be made by cash, check, or by deduction from your term bill.

On November 19, in the Winnett Lounge, there will be a casino party for everyone who has contributed to the drive. No one will win; all proceed go to the Y, but everybody can come out to try his luck.

The Y has received as a gift, a 1953 Chrysler New Yorker Custom Personal Limousine with fluid drive transmission, power steering, and power brakes. Present plans are to give the car to the house which

contributes the largest amount of money during the drive.

The many new and continuing program areas for which the money will be used include a look at the Human and Ethical Problems which accompany new discoveries in biological fields such as genetic engineering. This problem is of major concern to a large number of Caltech people and is becoming more of a problem as each new discovery is made.

More emphasis will be placed on camping and sports events. Most of these things are now done only by individual houses. The Y wishes to promote an interaction among students in the different houses. The programs about social and political issues will continue; all of the major candidates in the 1972 primary have been or will be invited to Tech. There will also be a continuation of the video tape/film workshop which has had an excellent response this year.

As in the past, the Y is depending on contributions of money and ideas from students to make it work. Students are the Caltech Y. What do you have to give?

From the Money Tree

NSF Seeks Student Ecology Proposals

In about a month, the National Science Foundation will conduct a competition among student-written proposals to select those to be supported in 1972. Two million dollars has been earmarked for this purpose. The successful proposals will be picked by juries composed of undergraduate students and science faculty members from schools in all parts of the nation.

Over one hundred student-originated studies of real life environmental problems were supported by the National Science Foundation during the summer of 1971 in 97 colleges and universities. These interdisciplinary projects involved 10-12 weeks' work by

groups of 5 to 20 participants. More than 1100 college students—primarily undergraduates, but some graduate students as well—took part. Judging from reports received from the student groups, the faculty advisors they selected, and many civic and governmental agencies concerned with environmental problems, these studies produced quantities of previously unavailable data and already have led to concrete efforts to correct some of the problems they identified.

For more information, watch the California Tech, or write to: Student-Originated Studies Program, National Science Foundation, Washington, D.C. 20550.

An educator nominated for the Award is judged on the basis of his capability as... "an articulate, passionate teacher who views education as a spiritual affair... a universal teacher who cares about values, society as a whole and human beings... with an incredible ability to impart enthusiasm and to teach the very essence of his subject... not merely a gifted teacher, but the most hard-working teacher imaginable who believes in the value and goodness of what he is doing and sees it as a necessary task of the spirit," according to Danforth Foundation president Merrimon Cunningham.

Now in their tenth year, the Harbison Awards are given annually, not only to recognize outstandingly gifted teachers, but also to encourage greater public understanding of the art and importance of teaching. The program was named in honor of the late E. Harris Harbison, professor of history at Princeton University and a former Trustee of the Danforth Foundation.

Liberation and Growth



ZPG members listened to Lana Phelan, western vice president of the National Council for the Repeal of Abortion Laws at their regular meeting last Thursday.

—Photo by Owens

Editorial

Support The Y Fund Drive

What more can we say? Little. What more can you do? Much.
 —Philip M. Neches
 Paul A. Levin
 Peter W. Beckman

the caltech forum

Picking Into Baxter? Please Don't.

Dear Sir,
 Twice in the past month someone has picked the lock of my office in Baxter and made off with articles of no great value in the market but of great value to myself. I don't mind the bayonet or the antique clock so very much. I do mind the pre-World War I German cadet helmet: of leather, with a brass spike on the top. I got it years ago. I miss it a lot. And I cannot get another.
 If anyone sees it around, would they let me know?
 —Peter W. Fay

Raise Questions On Higher Education

Dear Sirs,
 The Joint Committee on the Master Plan for Higher Education has been newly created to evaluate and long-range plan the future of higher education in California. We are assembling a staff team led by Pat Callan, and we will report to the Legislature in January 1973. We intend to search deeply for

the kinds of education and educational institutions which will meet the needs of the people and enable them to live well, and our society to flourish, in the years ahead.

We plan first to look broadly at the future of our state and of our society, and second to raise and explore the most significant questions about higher education, including its most basic assumptions. To do this validly and valuably, we need broad involvement and commitment of persons throughout the educational community and in every sector of the entire community.

We invite the students of Caltech and all readers of *The California Tech* to join actively in our searching and questioning throughout the course of our study.

Initially we're exploring precisely what questions should be asked about higher education and the future of California.

Will you begin your participation by informing us what questions you want us to raise? You can write me at the Joint Committee on the Master Plan for Higher Education, Assembly PO Box 83, State Capitol, Sacramento, California 95814. Will you join us actively, now?

—John Vasconcellos
 Chairman

Tech Talks To Fred Hoyle

Continued from Page One
 reached the stage where it had become a pretty politically explosive subject. One could see without too much trouble that there would be developments that would be very critically important. People were talking about bombs and so forth at that time. I suppose it was in the spring of 1939 that the critical step was taken that allowed a lot of this stuff to be done—and at the same time, nuclear physics began to be applied to astronomy, as it first appeared.

A third point was I developed a friendship with a chap who was in astronomy. All these things suggested to me that I could use the kind of stuff I'd been doing in nuclear physics in astronomy, and at least this would be an interesting thing to do. Then the war came so it wasn't really possible to go on working in any very consistent way, except on issues that were of immediate concern, but in the background I was able to do quite a bit of reading in astronomy and to follow up this line in odd moments, so that by the end of the war some six years later, I had become interested in a few specific problems that related to astronomy and nuclear physics. When the war was over, those were the problems I started on, and it kind of snowballed from there.

Tech: Do you think scientists perceive the world differently? In other words, is there some quality or some way of thinking which makes you inherently a scientist? I seem to find a difference between some of my friends who are more humanities oriented and some who are in science, just in the character of their thinking.

Hoyle: I think that's right; I think there is a total difference of thinking, because in all other activities except science, people are concerned to impress their own personality on the situation, aren't they, whereas in science you can't decide what is right and what is wrong in relation to your own personality—you have to bow to the facts.

Science is the only human activity where we are, as it were, programmed by the world. Everyone else seeks to program the world in accordance with themselves, and so I think this does make a change. I mean, to me, the other way of doing things is a sure recipe for disaster—people who decide they're right and then they try and force everyone else, force every situation to fit what they think. This of course explains the total disasters that politicians get into—there's no better example than the Vietnam situation, is there, where a few people just decided that come what may, the situation was going to fit into their pattern, and it didn't; I mean, the logistics just didn't turn out that way.

Tech: Do you think there are two separate cultures?

Hoyle: Yes, I think there are two separate cultures as to whether you are programmed by the world or whether you try to program the world. This is the essence of the two cultures, and I think that people who try to maintain that there are not are flying in the face of the facts.

Tech: In your lecture you said that you thought that all the specialized parts of knowledge, all the parts of the puzzle, would eventually fit together—I guess you would separate humanistic knowledge from scientific.

Hoyle: Oh yes, yes, I would mean that the scientific part to our knowledge of the physical world I was speaking about would fit into a pattern. Insofar as you can eventually analyze what human beings are like or what their brains do and so on, I suppose you could include all the humanistic things as well. I would imagine that in the long run one could easily find out why people behave in this sort of peculiar way, so that could be fitted into a sort of psychological pattern.

Tech: Why do you write science fiction?

Hoyle: I don't think there's any very strong reason for writing; I get ideas that interest me and usually they sit around for quite a while. I

shall think them over and if I find, after a year or two, that I'm still interested in the idea, then I might very well decide to write a story on it, that's the way it seems to go. But I don't clearly plan to start writing off a whole set of stories; sometimes I think I ought to, as a matter of policy, try writing more often, but it doesn't quite work out like that. . .

There are ideas that you can develop in a story form that you can't develop in a serious scientific paper, I suppose that's the root of the matter, but which might still seem worth some mention. For example, when I wrote *The Black Cloud*, I was interested really by the possibility of there being very complicated molecules in interstellar gases. At that time, there wasn't too much that you could do about this idea. It was a serious idea, but the actual experimental techniques for following it up didn't exist then. So, I wrote it in the form of a story, but a lot of this has now been found; it was pretty close to the facts of the case but, of course, for the purposes of a story it was built into a fictional framework.

There are many cases of psychology and human relationships that can be treated in a sort of fantastic form where one might not wish to deal with them in a more serious way, whether by a scientific paper or a serious essay. I think the story has a use, quite apart from the traditional form of merely seeking to entertain people.

Tech: Do you think we're ever going to attain star travel?

Hoyle: No, no, I wouldn't have thought so; I would think this is a little unlikely. The distances are so big, and it would take so long to attain a reasonable speed to get to stars that I think it's unlikely. Also, there's always been the disproof that, if this were possible, then other people would've gotten here, as it were; that doesn't seem to have happened.

Huttenbook Wins Prize

Robert A. Huttenback won the third annual Walter D. Love Memorial Prize for his book, "Gandhi in South Africa." The book was published by Cornell University Press on January 8, 1971.

The award, a citation and honorarium, was presented on October 30 during the fall meeting of the Conference of British Studies at Roosevelt University in Chicago. In making the presentation, the awards committee cited the author for his "humane and compassionate understanding of the subject, imagination, literary grace, and scrupulous scholarship." The Walter D. Love Prize

was established in 1968 for outstanding published works in the fields of British, Irish, and Commonwealth studies.

Huttenback's book tells the unfamiliar story of the two decades that Mohandas Gandhi spent in South Africa leading the immigrant Indians in their struggle for survival under British domination. The author documents the injustices suffered by the Indians and shows how Gandhi developed his startling theory of revolution through passive resistance attempting to bring these injustices to an end.

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Water Polo Sunk Twice by Same 11-4 Score



by Bob Kieckhefer
Perhaps it was because of midterms. Perhaps it was because everybody was tired. Whatever the reason, last week the water polo team played much more poorly than it had earlier in the season, dropping games to Occidental and Claremont-Mudd by identical 11-4 scores.

Against a fired-up team at Oxy last Wednesday the Techers never got their offense in gear, as Oxy jumped to a 3-0 first-quarter lead. The visitors soon tired as a result of swimming against the faster Oxy swimmers, and the score was boosted to 6-1 by halftime. Tech came back briefly in the second half, against Oxy's JV's, but they couldn't contain the home team's fast breaks, and the score mounted to 11-4 by the final gun. Steve Sheffield scored three of Tech's four goals while Tim Hight got the other.

Comedy of Errors
At Claremont last Saturday, the Tech team suffered through another game of mistakes, while Claremont's league-leading swimmers played

almost flawless polo. Virgil Shields played a good game in the goal, blocking a penalty shot and many shots from the field, but CHM's fast-breaking offense fired so many shots that he was overwhelmed. Meanwhile, Tech's offense suffered from many intercepted passes and shots which missed the goal. Steve Sheffield scored two penalty shots while Russ Desiderio and Tim Hight scored one each from the field.

Hoping to get back on a winning streak, yesterday the tankmen took on Pomona in a battle for fourth place in the conference standings. Saturday morning at 10, UC San Diego will invade Tournament Park for the Techer's last exhibition game of the season. Next Wednesday the tankmen will go to Redlands, and on Saturday, Nov. 20, the regular season ends with a game here against Occidental.

SPORTS!

Gavin Claypool,
Sports Editor

Caltech Runs Sixth

Perennial power Occidental ran away with the 1971 SCIAAC cross country crown last Friday on the Caltech course in Lower Arroyo Park.

The fleet Tigers defeated second place Whittier by 25 points, 32-57, a more than ample margin.

Caltech finished sixth with a total of 151 points. The team of Greg Griffin, Ralph Hayward, Ratchford Higgins, Alan Kleinsasser, and Scott Matthews were ahead of only La Verne, which had only one finisher.

Griffin, the Beavers' top runner this year, ran his first race in three weeks and finished 32th. His time was 31:58, almost three minutes slower than his course best.

The top finisher for Tech was Matthews, who place 22nd in the field of 40.

S.C.I.A.C. CONFERENCE MEET
At Lower Arroyo Park, 5.0 miles

Ande (O) 26:36 (course record); Nilsson (W) 26:50; Moffitt (O) 27:03; Conroy (C/HM) and Chappel (C/HM) 27:19; Clendaniel (W) 27:26; Alejandro (O) 27:34; Akiyama (C/HM) 27:35; Freemuth (P) 27:36; Burrows (O) 27:37.

DeAnda (O) 27:38; Kendig (O) 27:40; Luce (P) 28:20; Geisert (W) 28:28; Thomson (W) 28:39; Ninnis (R) 28:45; Ting (O) 28:57; Estrada (P) 28:58; Sellar (C/HM) 29:23; Tovar (W) 29:30;

Cameron (R) 29:35; Matthews (CIT) 29:50; Hughes (P) 29:55; Adams (P) 30:16; Kleinsasser (CIT) 30:29; Vryheid (R) 30:36; Eum (C/HM) 30:37; Ku (R) 30:57; Miller (R) 30:59; Ewing (R) 31:10.

Espinoza (R) 31:16; Griffin (CIT) 31:58; Tucker (W) 32:10; Higgins (CIT) 32:11; Angell (P) 32:41; Schoenfeld (C/HM) 32:46; Putnam (C/HM) 33:30; Hayward (CIT) 33:48; Stevens (P) 34:20.

[Ornelas (LV) 32:49, did not count in scoring because team was disqualified for finishing less than five runners.]

Team Scoring: Occidental 32, Whittier 57, Claremont/Harvey Mudd 63, Pomona 87, Redlands 120, Caltech 151, La Verne disqualified.

Beavers Stopped, 18-6

Stormo's Last-Second Run Saves Tech Scoring Streak

by Gavin Claypool

Key turnovers were costly to the Caltech Beavers Saturday, as they allowed the Azusa-Pacific Cougars to breeze to a 18-6 victory.

Two interceptions within the Cougar five stopped Tech drives in the second quarter. With fourth and 10 on the A-P 32, quarterback Lee Morris threw a long pass to the right corner. Two six-foot-plus defenders placed themselves into position, neatly blocking out the intended receiver, Greg Hoit (5-11), and made the interception.

In the last drive of the half, the Beavers pushed to the Cougar 22 on

CIT	AP	Time Elapsed	
0	0	First Quarter no scoring	
0	0	Second Quarter no scoring	
0	6	Hamilton 10 run	8:48
0	12	Wallbank 28 pass from Hamilton	10:20
0	18	Storey 7 pass from Hamilton	5:05
6	18	Stormo 18 run	12:00
Caltech	0 0 0 6	--	6
Azusa Pacific	0 0 12 6	--	18

four complete passes, a pair each to ends Gary Stormo and John Ellis. Morris then tried for a touchdown pass, but his throw was picked off on the run by a Cougar safety.

For the second week in a row, the Beavers had the second half

blues. Last week Caltech and Cal Poly Pomona were scoreless at the half, and then Pomona went out to a 13-0 lead.

After their drive stalled on the A-P 15—the farthest penetration so

Continued on Page Four

Soccer Ties Chapman

The Tech soccer team maintained its unbeaten non-conference record Saturday, tying Chapman College of Orange, 3-3.

The Beavers went ahead in the first half on a penalty shot by John Rogers and a goal by Peter Groom. Later on, Chapman scored to make the halftime score 2-1.

After tying the game in the third period, Chapman went ahead on a disputed play. Goalie Rogers dropped a shot he had just blocked, and the ball rolled toward the goal box. Rogers fell onto it, but the referee (who was at midfield) signalled a goal had been scored. Tech's protests were to no avail, and Chapman went ahead, 3-2.

In the final period, however, Peter Groom scored again to deadlock the score and give the Beavers a 0-0-2 non-conference record. Earlier in the season Rio Hondo Academy and Tech battled to a 6-6 tie.

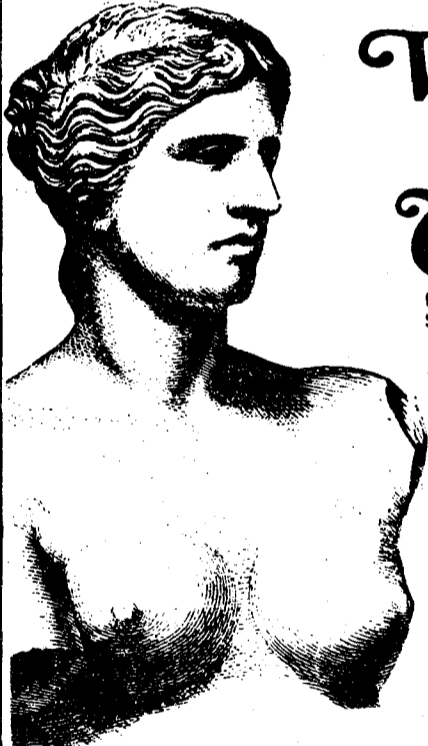
Last Wednesday Redlands beat Tech, 3-1.

Ye Olde Sports Menu

Friday, November 12			
1:30 p.m.	Football	Cal Poly Pomona JV	Home
Saturday, November 13			
10:00 a.m.	Water Polo	UC San Diego	Home
11:00 a.m.	Cross Country	NAIA District III	at Cal Lutheran
Wednesday, November 17			
2:30 p.m.	Soccer	Biola	Home
4:00 p.m.	Water Polo	Redlands	Away
Saturday, November 20			
10:00 a.m.	Water Polo	Occidental	Home

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Water Polo:
Caltech 4, Pomona 2.

Soccer:
Occidental 3, Caltech 2.

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Crash

Continued from Page One

Monday, November 8 — Dan has been moved from Intensive Care and can now have visitors. Hours are 1:30- 4:00 p.m. and 7:00- 8:00 p.m., Riverside General Hospital Rehabilitation Unit. He is coming along fairly well. His legs have motor control and the feeling has increased some over the weekend. Doctors estimate he will have to spend six to twelve weeks in the hospital.

Al was moved to Loma Linda yesterday. As soon as the doctors feel he is ready, they will perform plastic surgery on his face and wire his broken jaw. He's ready, in his opinion, to get going. He probably will be hospitalized for about a week after surgery and then recuperate for a couple of weeks.

Tuesday, November 9 — Dan will undergo spinal surgery tomorrow at Riverside Community Hospital.

Alan is progressing well. Plastic surgery has not been performed yet. The doctors feel he will only need to wear a back brace for a while to relieve his back injury.

Grid Team Stumbles

Continued from Page Three

far into Cougar territory. Tech attempted a 33 yard field goal. The kick by John Rogers sailed end-over-end, slanting toward the right, and then hit the crossbar about a foot from the right upright.

The aborted field goal turned out to be the sparkplug for the Azusa-Pacific offense. The Cougars marches 80 yards in 10 plays to score the game's first touchdown, and took a 12-0 lead two minutes later after recovering a Beaver fumble in CIT territory.

Caltech averted a shutout on the last play of the game, which extended their scoring streak to six games this year. On fourth down with ten seconds left, Morris handed off to Stormo at right half. Stormo ran around the right end, broke away from three would-be tacklers, and then cut back across the middle and into the endzone from the left side. The conversion attempt failed, making the final score 18-6.

Earlier in the quarter the Beavers had a fourth down on the Cougar one, but the Tech right front line went offside, nullifying a touchdown. With the ball back on the right side, but was dragged down at the five.

O/C Techers: Help Resurrect Throop Club

Plans are well underway in the project to create a modern version of the old Throop Club, to represent the interests of off-campus Techers.

Anyone interested in the details should look at the circular to be found in Louise Hood's Office in Winnett Student Center.

Totem Now Soliciting New Contributions

Contributions are still being collected for the first *Totem* of the year. People who wish to have material considered should submit it as soon as possible, either to Philip Massey (Ruddock), or Gesine Lohr (Dabney), or bring it by the *Tech* office in Winnett.

There will be a meeting of anyone interested in working on the constructional aspect Monday night at 7:30 p.m. in the *Tech* office.

Applications Due Soon for California State Scholarships

The California State Scholarship & Loan Commission reminds college students that the postmark deadline for the filing of California State Scholarship applications is November 19, 1971.

Nine thousand six hundred new scholarships for undergraduate college students are to be awarded by the Commission in April 1972. Students who believe they are in need of financial assistance for tuition and fees at the colleges of their choice and who have already taken the Scholastic Aptitude Test of the College Entrance Examination Board may secure application forms from their schools or the Commission offices in Sacramento.

Write to: State Scholarship and Loan Commission, 714 "P" Street, Sacramento, California 95814.

Grateful Dead Tickets For Sale on Campus

ASCIT has 200 tickets of the \$5 variety for the November 20 concert of the Grateful Dead at the Pauley Pavillion, UCLA. If you are interested in buying some (or all) of them, contact John Smith in Fleming House.

PCC Offers Two Parent Education Programs

Caltech parents or pre-school children can take advantage of two

parent education programs in the neighborhood. Mrs. John Benton, on the staff of the Pasadena City College-administered project, calls attention to the one on Tuesdays at the Knox Church, 225 South Hill; and one on Thursdays at the Hamilton School, 2089 Rose Villa. The sessions provide mothers of children from two to five years old the chance to observe their children with others and to become acquainted with other parents of young children.

Those wishing further information can call Mrs. Benton at 795-0121 or the office of community services at PCC.

Radio Club to Hold Morse Code Class

The Radio Club will hold a class in international morse code beginning next week. The classes will be held on either Wednesday or Thursday nights depending upon the preference of those taking the course.

Those who attend the classes and practice regularly should reach a proficiency of 10 wpm or more. The club will administer the examination for the novice class amateur license sometime during second term. People who are interested in the code classes should contact or send a note to Brett Tucker, 211 Page, or Bob Palitz, 206 Lloyd.

New York City Opera Needs Adult "Supers"

Adult opera "supers" (extras) will be auditioned on Sunday, Nov. 14, from 5 to 7 p.m. in The Music Center's Pavilion, fourth floor, to appear in the forthcoming engagement of the New York City Opera from Nov. 17 through Dec. 5.

No advance arrangements can be made. Candidates should simply report on time at the Artists' Entrance, 135 North Grand Avenue, where New York City Opera costumer Edgar Joseph will conduct the audition.

Average height for men is 5 feet 8 inches with waistlines averaging 30 to 32 inches. A few men range in height from 6 feet to 6 feet 4 inches.

Ladies should average 5 feet 5

inches in height, and be capable of wearing, in the main, sizes 6 to 8 dresses. There are a couple of parts which call for taller girls and larger dress sizes.

The intriguing description of the roles to be played by the "supers" includes litter bearers, Cleopatra's slaves, and Roman and Egyptian soldiers for "Biulio Cesare" which opens the season; Moors, smugglers, musicians and priests for "Carmen"; peers, ladies-in-waiting, pages and notaries for "Roberto Devereux"; lackeys and beggars for "Un Ballo in Maschera"; messengers and cooks for "Le Coq d'Or." and cathedral canopy bearers and Swiss guards for "Tosca".

giving dinner is invited to leave his or her name with the Master of Student Houses Office, extension 2195, mailing address O-54. Arrangements will be made with students who have indicated a desire to accept an invitation to spend the holiday in someone's home. Please respond by November 18.

Seminar To Be Held In Winnett Lounge

George Nelson, an industrial designer, will conduct a drop-in seminar on "Is America Ugly?" in Winnett Lounge Tuesday at 4 p.m.

Classified Ads

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Buying or selling something? You, too, can take out an ad in the *California Tech*!!! \$1.50 per inch plus 20¢ per extra line for Classifieds. Bring ad copy to the *Tech* office, or phone ext. 2154. O.K.?

Master's Office Needs Thanksgiving Hosts

Any member of the Caltech community who wishes to invite undergraduate students to Thanks-

the ruddock house barn dance sat., nov. 13

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